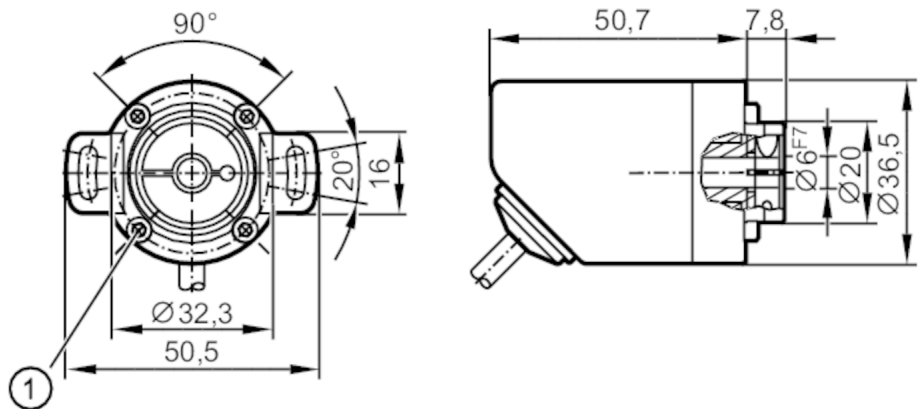


# RA3501



## Incremental encoder with hollow shaft

INCREMENTAL ENCODER BASIC LINE



1 M2.5 x 0.5 Depth 6 mm



### Product characteristics

|                         |                                                                |
|-------------------------|----------------------------------------------------------------|
| Resolution              | 1...10000; (parameterisable; Factory setting: 1024) resolution |
| Communication interface | IO-Link                                                        |
| Shaft design            | hollow shaft open to one side                                  |
| Shaft diameter [mm]     | 6                                                              |

### Application

|                    |             |
|--------------------|-------------|
| Function principle | incremental |
| Detection system   | magnetic    |

### Electrical data

|                                    |              |
|------------------------------------|--------------|
| Operating voltage [V]              | 4.75...30 DC |
| Current consumption [mA]           | < 150        |
| Protection class                   | III          |
| Reverse polarity protection        | yes          |
| Power-on delay time [s]            | 0.5          |
| Max. revolution electrical [U/min] | 12000        |

### Outputs

|                              |                              |
|------------------------------|------------------------------|
| Electrical design            | HTL/TTL                      |
| Switching frequency [kHz]    | 1000                         |
| Factory setting              | Output function: HTL (50 mA) |
| Short-circuit protection     | yes                          |
| Phase difference A and B [°] | 90                           |

### Measuring/setting range

|            |                                                                |
|------------|----------------------------------------------------------------|
| Resolution | 1...10000; (parameterisable; Factory setting: 1024) resolution |
|------------|----------------------------------------------------------------|

### Accuracy / deviations

|              |     |
|--------------|-----|
| Accuracy [°] | 0.1 |
|--------------|-----|

### Software / programming

|                           |                                             |
|---------------------------|---------------------------------------------|
| Parameter setting options | Resolution; direction of rotation; HTL; TTL |
|---------------------------|---------------------------------------------|



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| Interfaces                                                           |                |                                                                            |
|----------------------------------------------------------------------|----------------|----------------------------------------------------------------------------|
| Communication interface                                              |                | IO-Link                                                                    |
| Transmission type                                                    |                | COM2 (38,4 kBaud)                                                          |
| IO-Link revision                                                     |                | 1.1                                                                        |
| SIO mode                                                             |                | yes                                                                        |
| Min. process cycle time                                              | [ms]           | 2.3                                                                        |
| Operating conditions                                                 |                |                                                                            |
| Ambient temperature                                                  | [°C]           | -40...80                                                                   |
| Note on ambient temperature                                          |                | for flexibly laid cable: -25 °C                                            |
| Storage temperature                                                  | [°C]           | -40...80                                                                   |
| Max. relative air humidity                                           | [%]            | 95; (condensation not permissible)                                         |
| Protection                                                           |                | IP 65; IP 66; (on the housing: IP 67; on the shaft: IP 64)                 |
| Tests / approvals                                                    |                |                                                                            |
| Shock resistance                                                     |                | 100 g                                                                      |
| Vibration resistance                                                 |                | 20 g                                                                       |
| MTTF                                                                 | [years]        | 292                                                                        |
| Mechanical data                                                      |                |                                                                            |
| Weight                                                               | [g]            | 318.5                                                                      |
| Dimensions                                                           | [mm]           | Ø 36.5 / L = 58.5                                                          |
| Materials                                                            |                | flange: aluminium; housing: stainless steel (1.4521 / 444); cable plug: PA |
| Tightening torque                                                    | [Nm]           | < 0.7; (Mounting screw)                                                    |
| Max. revolution, mechanical                                          | [U/min]        | 12000                                                                      |
| Max. starting torque                                                 | [Nm]           | 1                                                                          |
| Reference temperature torque                                         | [°C]           | 20                                                                         |
| Shaft design                                                         |                | hollow shaft open to one side                                              |
| Shaft diameter                                                       | [mm]           | 6                                                                          |
| Shaft material                                                       |                | stainless steel                                                            |
| Installation depth of shaft                                          | [mm]           | 18                                                                         |
| Max. axial shaft misalignment                                        | [mm]           | 0,5                                                                        |
| Fixing flange                                                        |                | Ø 36.5 mm                                                                  |
| Electrical connection                                                |                |                                                                            |
| Cable: 2 m, Ø 4.9 mm; radial, can also be used axially; 5 x 0.14 mm² |                |                                                                            |
| IO-Link                                                              |                |                                                                            |
| brown                                                                | L+             |                                                                            |
| white                                                                | not to be used |                                                                            |
| blue                                                                 | L-             |                                                                            |
| grey                                                                 | not to be used |                                                                            |
| black                                                                | IO-Link        |                                                                            |
| Screen                                                               | housing        |                                                                            |



Incremental encoder with hollow shaft

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|         |                    |
|---------|--------------------|
| encoder |                    |
| brown   | UB                 |
| white   | A                  |
| blue    | GND                |
| grey    | B                  |
| black   | Z/0-Pulse (90 deg) |
| Screen  | housing            |

Diagrams and graphs

Pulse diagram

